

## Claims

1. A device for determining the state of a particle filter, characterized in that an acoustic source (1) is provided for transmitting an acoustic signal (1.1) toward the particle filter (3), an acoustic receiver (2) is provided for receiving the acoustic signal (1.2) that has been changed by the particle filter (3), and an evaluation unit (4) connected to the acoustic receiver (2) is provided for evaluating the received acoustic signal (1.2).
2. The device according to claim 1, characterized in that the acoustic source (1) is an engine, a whistle, or a speaker.
3. The device according to claim 1 or 2, characterized in that the acoustic source (1) is embodied so that the producible acoustic signal (1.1) lies in the ultrasonic range.
4. The device according to one of claims 1 through 3, characterized in that the acoustic receiver (2) is a microphone.
5. The device according to one of claims 1 through 4, characterized in that the acoustic source (1) is disposed on one side of the particle filter (3) and the acoustic receiver (2) is disposed on the other side of the particle filter (3).
6. The device according to one of claims 1 through 4, characterized in that the acoustic source (1) and the acoustic receiver (2) are disposed on one side of the particle filter (3).

7. The device according to one of claims 1 through 4, characterized in that an additional acoustic receiver (2) is provided, the one acoustic receiver (2) being disposed on one side of the particle filter (3) and the other acoustic receiver being disposed on the other side of the particle filter (3).

8. The device according to one of claims 1 through 5, characterized in that the evaluation unit (4) is embodied so that it is able to evaluate the amplitude of the acoustic signal (1.2) and/or can compare the phase positions of the two acoustic signals (1.1, 1.2) to each other.

9. A method for determining the state of a particle filter, characterized in that an acoustic source (1) transmits an acoustic signal (1.1) toward the particle filter (3), an acoustic receiver (2) receives the acoustic signal (1.2) that has been changed by the particle filter (3), and an evaluation unit (4) determines the state of the particle filter (4) based on this received signal.

10. The method according to claim 8, characterized in that the phase and/or the amplitude of the received acoustic signal (1.2) are evaluated.

11. The method according to claim 9 or 10, characterized in that the acoustic source (1) produces a sinusoidal or pulse-shaped acoustic signal.

12. The method according to one of claims 9 through 11, characterized in that the transmitted and received acoustic signals (1.1, 1.2) are used to determine the ambient temperature.